

MT-787 WB Instruction Manual

Digital-Processing Technology

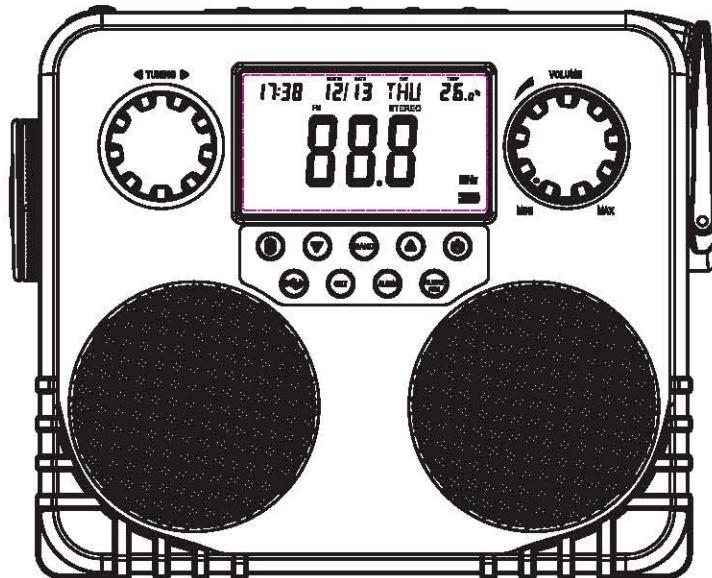
Multi-Banded Radio

Dual Stereo Effect

Bluetooth Player

Hand-cranking dynamo for self-powered feature

Emergency Lighting



Content

- 1) Introduction**
- 2) Parts and Functions**
- 3) Radio Function (AM/FM/Weather Band)**
- 4) Bluetooth Player**
- 5) Settings and Jacks instruction**
- 6) Charging**
- 7) Specifications**
- 8) Technical Specifications**
- 9) Precautions**
- 10) Problems shooting**
- 11) Packing list**

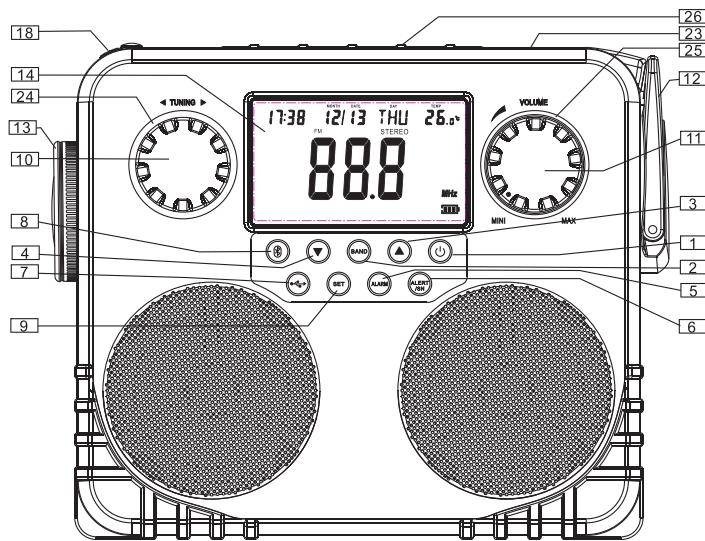
1) Introduction

- 1.1 In-built high performance alternator,SOS lighting, Emergency lighting, FM/AM/
Weather band radio, weather alert siren and cell phone charging.
- 1.2 LCD screen with backlight.
- 1.3 Automatic/Manual search of radio frequency or channel.
- 1.4 Efficient LED allows great lighting performance.
- 1.5 Stereo Speaker.
- 1.6 Calendar with date/week/month/year.
- 1.7 In-built high performance MCU with desired circuit, two 12 Bit digital-analog
converters, AGC circuit, which lead to accurate signals received and better
performance of the unit.
- 1.8 Automatic loop-back circuit design for AM mode.
- 1.9 Digital Clock and 10-90 minutes automatic switch-off function (sleeping mode).
- 1.10 Pre-set switch-on function; users could set to alarm/switch on the radio at a certain time.
- 1.11 No battery needed and portable. Environmentally friendly.
- 1.12 Comply with FCC.

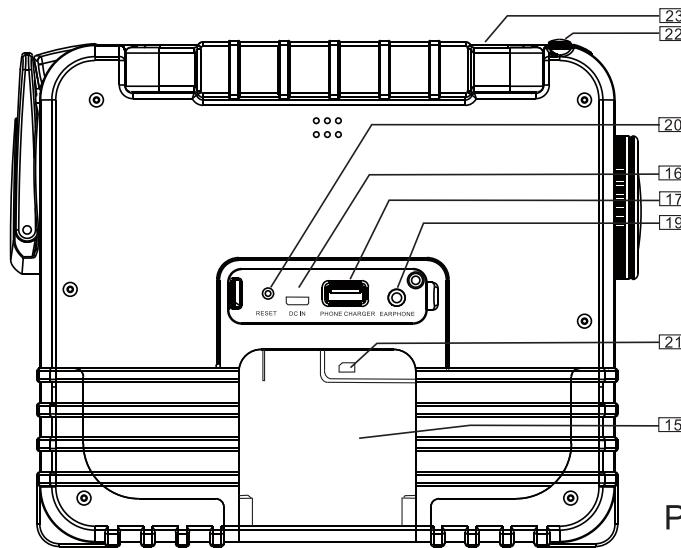
2) Parts and Functions

2.1 Parts and Functions (Pic1, Pic2)

1. On/Off Switch;Sleep Mode Switch;Alarm-Off button	14. LCD display
2. Band	15. Battery Door
3. Previous	16. DC-in
4. Forward	17. USB-out
5. Alarm clock	18. Light Switch
6. Alert/Snooze	19. Earphone plug
7. USB output switch	20. Reset
8. Bluetooth switch	21. Battery Plug
9. SET switch	22. Antenna
10. Channel knob	23. Solar Panel
11. Volume knob	24. Radio playing indicator/Alert LED
12. Hand-crank	25. Radio playing indicator/Alert LED
13. LEDs	26. Handle

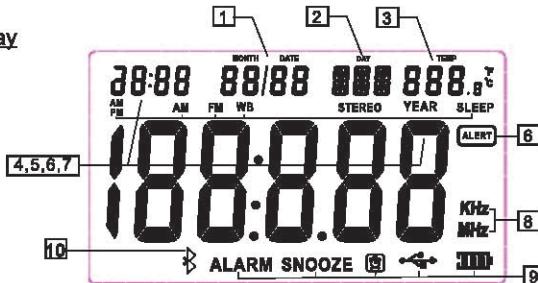


Pic1



Pic2

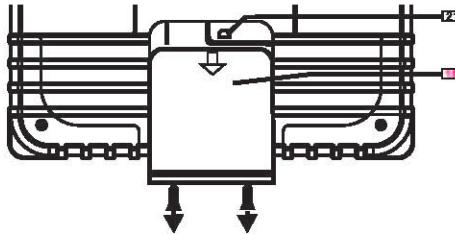
2.2 LCD display



1. Month/Date	2. Week
3. Temperature	4. Time/Year
5. Banding/Stereo indicator	6. NOAA alert Indicator
7. Radio Frequency Unit Time display	8. Radio Frequency Display
9. Alarm clock/snooze/USB-out/battery indicator	10. Bluetooth icon

2.3 Battery

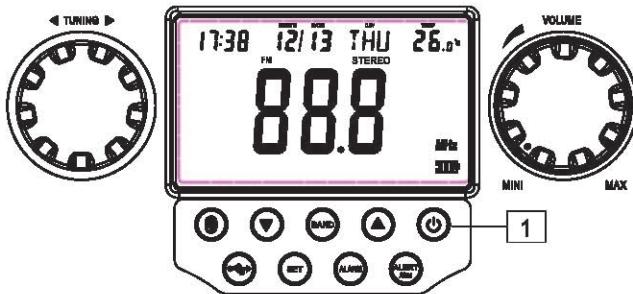
The battery is in-built. Battery specifications are **3.7V / 1.8Ah**. Before using the radio, please connect the radio with the battery. Battery plug is located at (21), as shown below:



3) Radio Function

3.1 Radio Play

3.1.1 Press the 'on/off' (1) and 'radio playing indicator' (24, 25) will light on. LCD will show the existing mode (AM/FM/WB). If it is in the radio mode, the playing frequency will remain the same as that played last time.

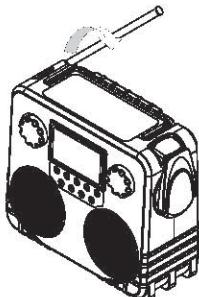


3.1.2 Switch off the unit by pressing the 'on/off' (1) when it is not in use. The LCD screen will display the time and temperature. After 35s, only time will be displayed. After 5 minutes, the light will go out for energy saving purpose.

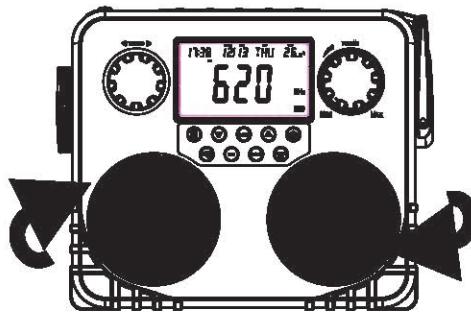


3.2 Antenna

3.2.1 When listening to the radio (WB/FM), please pull out gently the antenna. And adjust the length and also the angle for the best signal coverage.



3.2.2 The unit is using its internal magnetic antenna for AM radio playing. When listening to AM, users can rotate the radio for best signal received. (see below picture)



3.3 Volume Adjusting

3.3.1 When the radio is on, tune the 'volume knob' (11) to adjust the volume.

3.4 Manual-search Channel

3.4.1 When the radio is on, tune the 'channel' (10) to adjust the frequency till the desired channel is reached.

3.4.1.1 Manual-search AM



3.4.1.2 Manual-search FM

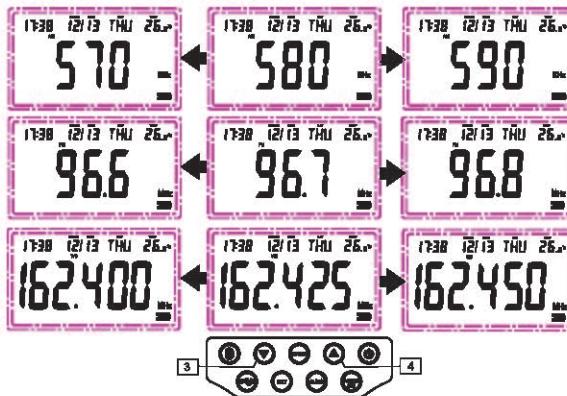


3.4.1.3 Manual-search WB



3.5 Auto-Search Channel

- 3.5.1 When the radio is on, users need to long-press the ' Previous '/ ' Forward ' (3/4) for **several** seconds and the unit will automatically search and play the reached channel.**



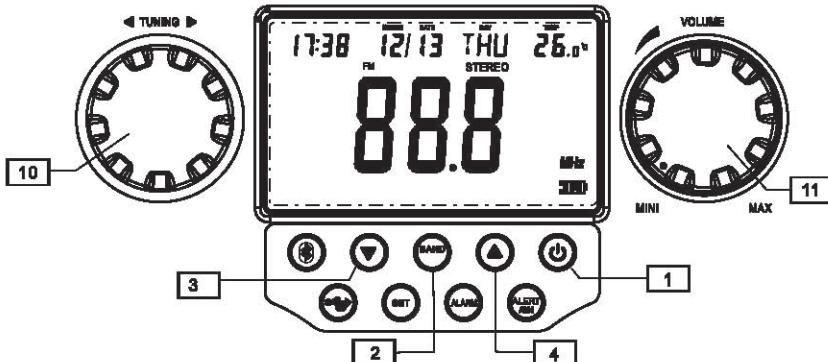
Remarks:

- I . Auto-search favors the channels with very strong signal.
- II . If the signal of the channel reached is not strong enough, the frequency shown on the LCD might be toppling. Users might need to change to manual-search for adjusting the desired channel frequency.
- III . When changing the FM frequency, tune the 'channel knob' (10)will adjust the frequency +/- 0.1MHz per click.
- IV . When changing the WB frequency, tune the 'channel knob' (10)will change one channel per click.
- V . When changing the AM frequency, tune the 'channel knob' (10)will adjust the frequency +/- 10 KHz per click.

**3.6 FM/AM/WB Instruction(Frequency Range FM 87.5~108MHz / AM520~1710KHz
WB162.400~162.550MHz)**

3.6.1 FM Radio

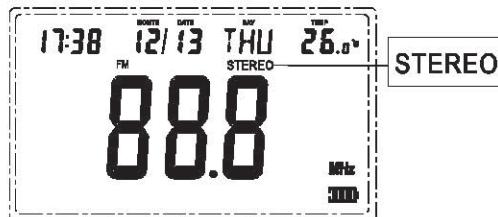
3.6.1.1 Radio



- 3.6.1.1.1 Press once 'on/off' (1) and switch on the radio. The 'radio indicator lights' (24, 25) will be on.
- 3.6.1.1.2 Pull out completely the ' antenna ' (22).
- 3.6.1.1.3 Press ' Band ' (2) till the FM mode is reached.
- 3.6.1.1.4 Tune the ' volume knob ' (11) to adjust the volume.
- 3.6.1.1.5 Press ' Previous ' / ' Forward ' (3/4) or tune the channel knob (10) to choose desired channel.
- 3.6.1.1.6 If there is noise, re-locate the radio for better signal received.
- 3.6.1.1.7 Press again ' on/off ' (1) for switching off the unit.

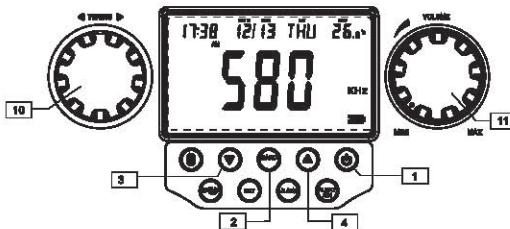
3.6.1.2 Stereo Effect:

3.6.1.2.1 When the LCD displays the STEREO icon, it means that the broadcast could support stereo broadcast.



Remarks: When the signal is less than 25dBu, the unit will automatically turn back to mono effect for clearer broadcast.

3.6.2 AM Radio



3.6.2.1 Press once 'on/off' (1) and switch on the radio. The radio indicator lights (24, 25) will be on.

3.6.2.2 Press 'Band' (2) till the AM mode is reached.

3.6.2.3 Tune the 'volume knob' (11) to adjust the volume.

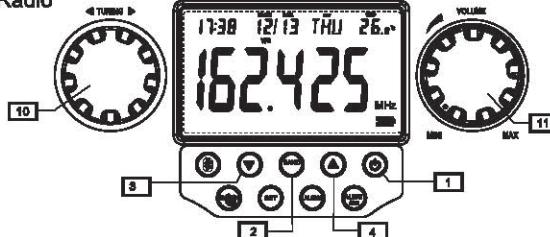
3.6.2.4 Press 'Previous /' Forward' (3/4) or tune the 'channel knob' (10) to choose desired channel.

3.6.2.5 If there is noise, re-locate the radio for better signal received.

3.6.2.6 Press again 'on/off' (1) for switching off the unit.

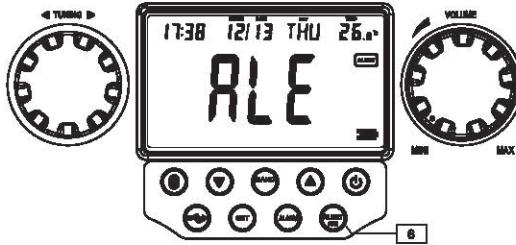
3.6.3 WB Radio

3.6.3.1 Radio



- 3.6.3.1.1 Press once 'on/off' (1) and switch on the radio. The radio indicator lights(24, 25) will be on.
- 3.6.3.1.2 Pull out completely the antenna.
- 3.6.3.1.3 Press 'Band' (2) to till the WB mode is reached.
- 3.6.3.1.4 Tune the 'volume button' (11) to adjust the volume.
- 3.6.3.1.5 Press'Previous'/'Forward'(3/4) or tune the channel knob (10) to choose desired channel.
- 3.6.3.1.6 If there is noise, re-locate the radio for better signal received.
- 3.6.3.1.7 Press again 'on/off' for switching off the unit.

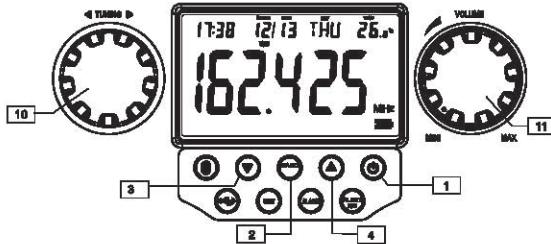
3.6.3.2 Alert Function



- 3.6.3.2.1** Press once 'on/off' (1) and tune the unit to WB mode (Alert function is not applicable in FM/AM mode). Choose the desired channel (WB1~7) and press the 'alert' (6) for 3 seconds, the alert icon will be shown on the LCD display.



- 3.6.3.2.2** It shows that the alert function is working. When it receives the NOAA signal it will switch on automatically and play the WB information. The LCD will show the wordings of the broadcasting channel and the 'Alert LED' (24, 25) will light on.



- 3.6.3.2.3** Long-press the 'alert' (6) for 3 seconds for quitting. If the unit is switched off during this mode, long-press 'alert' (6) button while the unit is off will also activate this function. In the off state, long press 'alert' button, there will be ALERT character blinking, cancel the 'alert' will show weather band signal.

4) Bluetooth setting

- 4.1 Press 'Bluetooth'(8) to switch on and press(8) againd or 'power' button to switch off the Bluetooth function.
- 4.2 While ' BLUE ' is shown on the LCD, it shows that the Bluetooth function is on. Also, the radio playing indicator (24,25) will **flash in 15 seconds at a rate of 1 flash per second**.
- 4.3 When white light is flashing on the Radio playing indicator (24, 25), it shows that the radio is connected with the user's device.
- 4.4 The volume could be adjusted by the 'Volume knob'(11) or by mobile phone to control the volume and other functions.



Remark1: Example of Bluetooth connection (Samsung mobile phone)

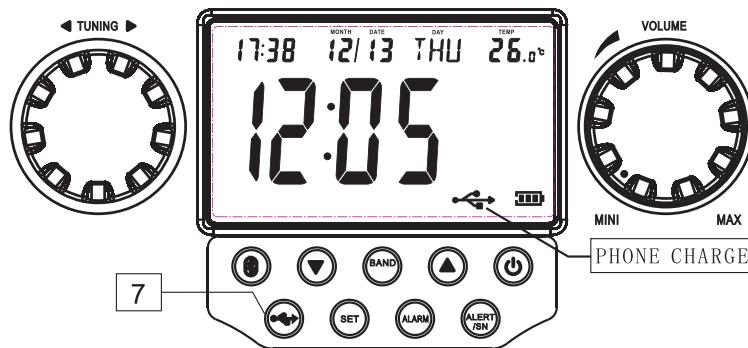
- I . Switch on the Bluetooth function as stated in steps 4.1–4.4
- II . Switch on Samsung mobile phone .Enter the menu and switch on the phone Bluetooth function. Enable the phone to search via Bluetooth. On the list of search, there will be the model number of the radio: MT787, select the model number and start the connection.
- III . After the devices are connected, the white flashing light will **stop flash**.
- IV . The connection is finished. The radio could play the media in the cell phone.

Remark2: Bluetooth function works the best within 10m(**33 inch**) without blockage.

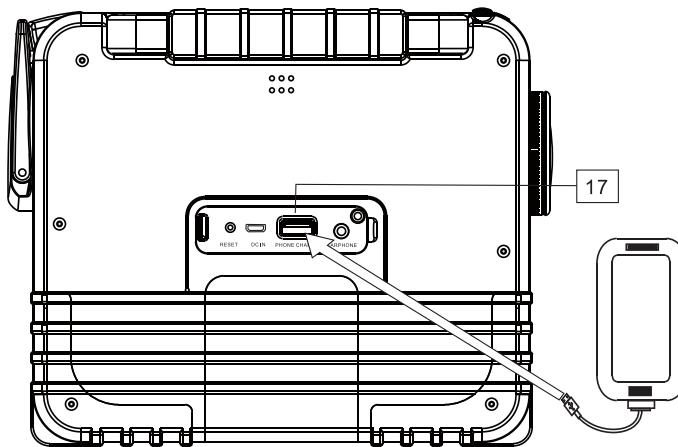
5) Settings and Plugs

5.1 Phone charging

5.1.1 Press ' USB output switch ' (7) till the LCD displays the phone charger icon.



5.1.2 Connect the USB charging cable into the ' USB out ' (17) and then the phone could be charged.



5.1.3 Press again the ‘ USB output switch ’ (7) for switching off the phone charging function.

Noted switching on this function, even without charging phone, will draw current. In other words, the battery will easily run out. So please be reminded always to switch off this function when no phones are charged.

Remark: when the radio is turned to AM band or switches to bluetooth under AM band, the USB output will be shut down automatically.

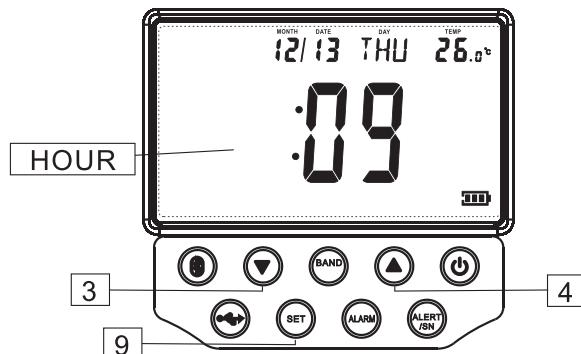
5.2 Clock

5.2.1 The time mode offers 24hr/12hr mode. The default setting is 12hr mode, when battery is first-time connected or when the lithium battery and backup battery are run out of electricity, time will start from ‘12:00’, user have to reset the time. If user want to change to 24-hour format, user will have to reset the format also.

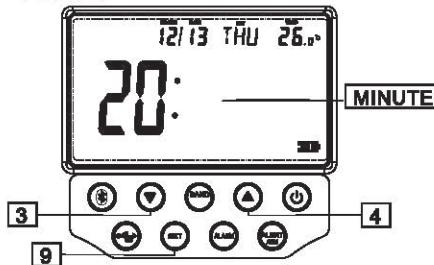


5.2.2 When the unit is off and if there is an alarm icon, press the ‘ alarm ’ (5) to disable the alarm clock function.

5.2.3 Long press the ‘ set ’ (9), and the ‘ hour ’ digit flashes and is ready to be set. The hour could be set by pressing ‘ previous ’ / ‘ forward ’ (3/4). Every press counts for +/– 1 hour.



- 5.2.4 Press twice the 'set' (9) and the 'minute' digit flashes and is ready to be set. The minute could be set by pressing 'previous' / 'forward' (3/4) buttons. Every press counts for +/- 1 minute.

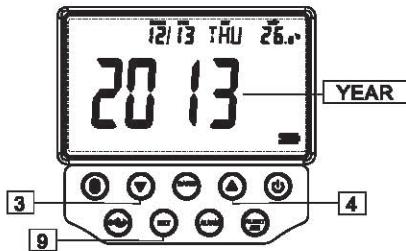


5.3 Calendar

- 5.3.1 The 'year' in the unit could be set from 2000 to 2099. Default year is 2013. Users could change the date with the following steps.

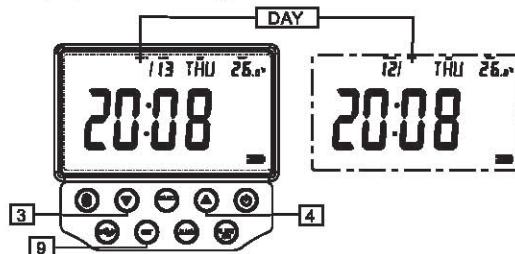
5.3.1.1 Year setting

- 5.3.1.1.1 When the unit is off and if there is an alarm icon, press the 'alarm' (5) to disable the alarm **clock** function.
- 5.3.1.1.2 Press three times the 'set' (9), the year could be set by pressing 'previous' / 'forward' (3/4). Every press counts for +/- 1 year.



5.3.1.2 Month Setting

5.3.1.2.1 Press four times the 'set' (9), the month could be set by pressing 'previous' / 'forward' (3/4) buttons. Every press counts for +/- 1 month.

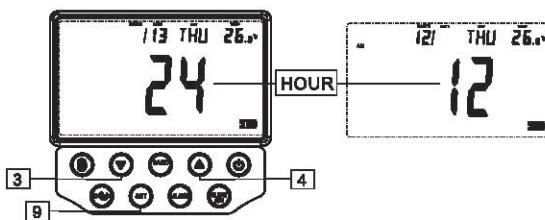


5.3.1.3 Date setting

5.3.1.3.1 Press five times the 'set' (9), the date could be set by pressing 'previous' / 'forward' (3/4) buttons. Every press counts for +/- 1 day.

5.3.1.4 Hour mode setting

5.3.1.4.1 Press six times the 'set' (9) button, the 12/24 hour mode could be set by pressing 'previous' / 'forward' (3/4) buttons.



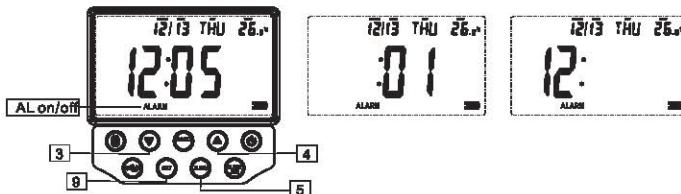
5.3.1.5 Week

- 5.3.1.5.1 The week shown on the unit is according to the date the users set.
- 5.3.1.5.2 For setting the time, users need to start the steps from the beginning.

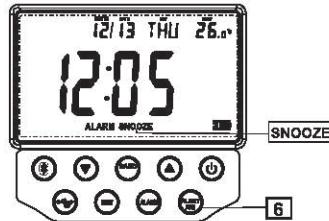
5.4 Alarm and snooze setting

- 5.4.1 Short press 'alarm'(5) first time to enable or disable the alarm clock function. (When alarm rings, user can press 'Power' button to stop the ring, or if user has not press stop then it will stop automatically after 1 minute.)
- 5.4.2 SETTING: Long press 'alarm'(5), when 'hour' digital flashing state short press 'previous'/'forward' (3/4) button. Every press counts for +/- 1 hour.
- 5.4.3 Short press 'alarm'(5) second time, 'minute' digital flashing state short press 'previous'/'forward'(3/4) button. Every press counts for +/- 1 minute.

Remarks: Please set this function in the off statement.

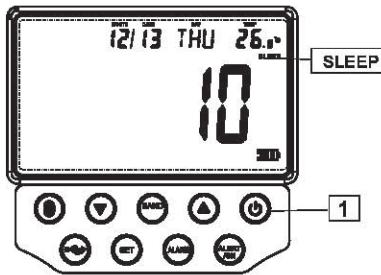


- 5.4.4 When the unit start alarming, press any key of USB, BAND, SET, UP, DOWN button or turning knob, LCD display will show "snooze" then alarm could be delayed for 5 minutes.



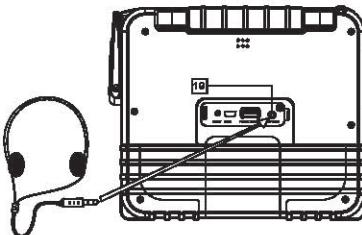
5.5 Sleeping Mode

- 5.5.1** Sleeping mode could be set so that the unit will be switched off automatically for saving battery.
- 5.5.2** When the unit is off, press and hold 'sleep mode switch' (1) then the LCD screen will show "SLEEP" and "90", after 2 seconds the unit will turn on automatically. It means that the unit is under sleeping mode and will be switched off after 90 minutes.
- 5.5.3** During sleeping mode, the switch-off time could be set by pressing the 'sleep mode switch' (1). Every press counts for 10 minutes less for the switch-off time, i.e., the time sequence is: 90–80–70–60–50–40–30–20–10–0 (cancel sleeping mode).
- 5.5.4** After setting the sleeping mode, users could choose to listen to the radio or to play bluetooth. The unit will be off automatically when the count-down of time finishes.
- 5.5.5** The sleeping mode could be stopped (the unit could be switched off) by pressing the 'sleep' (1) once.



5.6 Earphone

- 5.6.1** When playing the radio or bluetooth, plug in the earphone in the 'earphone plug' (19). The speaker will automatically be off.



5.7 Back Light

- 5.7.1** The back light will be on for 5 minutes per every press. It could be found easily in the dark.

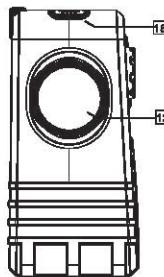
5.8 Pressing Buzz

- 5.8.1** The unit will give a buzz for every press.

6) Lighting and Charging

6.1 Lighting

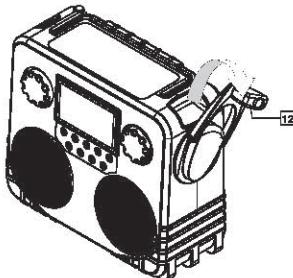
- 6.1.1** Press 'Light on/off' (18) for switching on the lighting function.
- 6.1.2** Press again the 'Lighting on/off' (18) to switch on the SOS emergency lighting. 3 'LEDs' (13) will flash at 1Hz. Press third time the 'Lighting on/off' (18) switch off the light.
- 6.1.3** If the lighting is weak, hand-crank the unit for brighter lighting effect.



6.2 Charging

6.2.1 Hand-crank charging

6.2.1.1 Take out 'hand crank' (12) from its position and flip 180°.



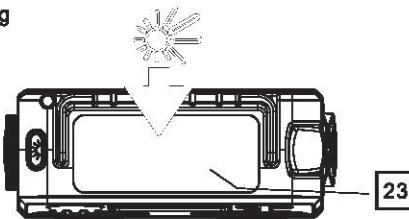
6.2.1.2 Hand crank in a speed of 130–150 rev/min (either clockwise/anti-clockwise).

6.2.1.3 While cranking, charging icon will be shown on LCD, which means the battery is being recharged.

6.2.1.4 If hand-cranking speed is slower than 130 rev/min, charging performance will be worse.

6.2.1.5 After usage, please turn the hand crank to its original position.

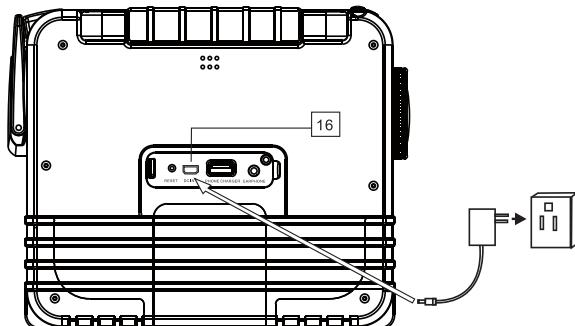
6.2.2 Solar-charging



- 6.2.2.1 The specification of solar panel(23) is $5V \pm 0.3V/100mA$.
- 6.2.2.2 Put the unit under strong sunlight (light intensity 38000Lux or above).
- 6.2.2.3 Meanwhile, the charging icon will be shown on the LCD screen.
- 6.2.2.4 When charging voltage is $4V$ or above, the charging icon will be stopped.

6.2.3 DC charging

- 6.2.3.1 (16) is the DC-in plug. The unit should be used with a DC $5V \pm 0.5V/1.2Ah$ adaptor for changing.
- 6.2.3.2 Plug in the adaptor into the 'DC-in plug' (16). Then connect the adaptor to wall socket.
- 6.2.3.3 Meanwhile the charging icon will be shown on the LCD screen.
- 6.2.3.4 When charging voltage is $4V$ or above, the charging icon will be stopped.



7) Specifications

Technical Specifications	
Dimensions	22.5(L)X 7.8(W)X 18(H)cm
Net weight	1180g
Maximum Power (whole unit)	7W
Working Temperature	-10°C ~40°C
Storage Temperature	-20°C~45°C
Speaker	4Ω /5W
Earphone	Φ 3.5mm/32Ω

8) Technical Specifications

	ITEM	Rated Value	Maximum Value	
1.	Stand-by current (back light is off)(uA)	300	500	
2.	1W LED working current (mA)	300	320	
3.	Red LED working current (mA)	64	80	
4.	Back light LED current (mA)	30	±10	
5.	Adaptor 5V/1200mA	—	—	
6.	USB output voltage (V)	5	±0.25	
7.	USB output current (mA)	500	±200	
8.	temperature variance (range -10°C→+75°C)	±1°C	±1°C	
9.	daily time variance (s)	±1	±2	
10.	1 W LED lighting intensity (LUX) (12cm)	10000	9000	
11.	Red LED lighting intensity (LUX) (12cm)	160	150	
12.	Hand-crank for 1 minute	1 W LED lighting time (minute)	10	5
13.	Hand-crank for 3 minute	1 W LED lighting time (minute) Support Iphone talking time (when the phone is on) (minutes) Radio playing time (moderate volume) (minutes) Bluetooth playing time (moderate volume) (minutes)	45 6 25 5	40 4 20 3
14.	Fully-charger	1 W LED lighting time (hour) Lighting Time (hour) Radio playing time (hour) MP3/Bluetooth playing time (hour) Iphone charging time (hour)	4.5 30 4 4 1.1	40 28 3.5 3.5 1

LED Lighting Part	
Light intensity	1W LED 10000 Lux (distance 120mm)
Shooting Distance	≥50 m
LED life	>10000 hr
Working Voltage	3.0 ~ 3.3V
Working Current	≤320 mA
Maximum Consumption	1W
Warning LEDs	3PCS red LEDs flashing rate 1Hz
Charging Part	
Hand-cranking Power	5W (130 rpm)
Hand Crank time to charge fully the radio	3.5 hr (130 rpm)
Battery Specification	Lithium battery: 3.7 V/1800mAH
Battery Life	≥1 year
Battery charging cycles	≥500 cycles
Charging Time through adaptor	around 6 hours
Stand-by time	≥90 days (25°C)
solar panel specifications	5V/100mA (sunlight intensity 38000LUX)
Charging time by solar energy	around 45 hours(sunlight intensity 38000LUX)

Radio Specification

Frequency AM: 520 ~ 1710KHz

FM: 87.5 ~ 108MHz

WB : 1CH 162.400MHz

2CH 162.425MHz

3CH 162.450MHz

4CH 162.475MHz

5CH 162.500MHz

6CH 162.525MHz

7CH 162.550MHz

1. Sensitivity(FM): 4 μ V; Sensitivity(AM): 4mV

2. Stereophonic separation : \geq 20dB

3. Signal-to-Noise SNR(FM) \geq 45dB; Signal-to-Noise SNR (AM) \geq 40dB

4. Standby-current : RADIO(Time mode) \leq 80 μ A

9) Precautions

- 9.1 For first time use, or while the unit has not been used for more than 60 days, users need to hand-crank the radio for 3~5 minutes to re-activate the battery.
- 9.2 When the radio is not being used, please switch the radio to standby mode to save the battery.
- 9.3 Please cover well with the charging plug with the rubber cover when user does not charge cell phone.
- 9.4 Do not use chemical solvent/detergent to clean the radio surface. Clean it with dry towel.
- 9.5 Do not expose under prolonged sunlight. Keep it in moderate temperature.
- 9.6 Do not shoot light on naked eyes.
- 9.7 Do not screw out the screw or the radio could not function in correct way.
- 9.8 Please follow strictly this instruction manual.

10) Problems shooting

10.1 Lighting problem

- 10.1.1** While the light goes dim, it shows the battery level is low. Please hand-crank or charged by AC adaptor to recharge it.
- 10.1.2** If recharging fully the battery could only give short lighting time, it shows that the battery deteriorates. Please change the battery.

10.2 Cannot charge the cell phone

- 10.2.1** Please check if there is any wrong cable connection.
- 10.2.2** Please check if the phone charging cable is appropriate.
- 10.3 Please press the "RESET" button to reset it if fail on any function.**

11) Packing List

- 11.1** MT-787WB (radio)
- 11.2** Instruction Manual
- 11.3** Packing Box
- 11.4** Adaptor (Optional)

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the product.

NOTE: This product has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This product generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the product does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

- Reorient or relocate the receiving antenna.
- Increase the separation between the product and receiver.
- Connect the product into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

MADE IN CHINA

2013/9/23